IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Yadong Li et al.	:	
	:	Art Unit: 2624
Serial No.: 10/659,184	:	
	:	Examiner: Motsinger, Sean T.
Filed: September 10, 2003	:	
	:	
For: SYSTEMS AND METHODS FOR IMPLEMENTING A SPECKLE REDUCTION FILTER	:	

TRANSMITTAL LETTER ACCOMPANYING APPEAL BRIEF

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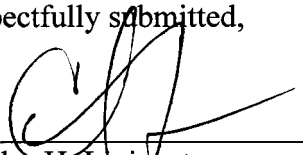
Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Transmitted herewith is the Appeal Brief in this application. The Notice of Appeal in this Application was filed on September 2, 2009. A fee in the amount of $540.00 for the Notice of Appeal was paid at that time. This Appeal Brief is timely because the Appeal Brief is being filed on September 30, 2009, which is within two months of the filing of the Notice of Appeal.

The Commissioner is hereby authorized to charge Deposit Account Number 502401 for the filing of a brief in support of an appeal in the amount of $540.00. In the event of overpayment or underpayment, please credit any excess or charge any deficiency to Deposit Account No. 502401.

Respectfully submitted,



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APPELLANTS' BRIEF

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TABLE OF CONTENTS

This Brief contains the following sections under the headings and in the order set forth below.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is GE Medical Systems Global Technology Company, LLC, whose address is 3000 North Grandview, Waukesha, WI 53188.

II. RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, judicial proceedings or interferences known to the Appellant which may be related to, directly affect or will be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

Claims 28-47 are pending in the application and are the subject of this Appeal. Claims 28-47 stand rejected and are on appeal. Claims 1-27 have been canceled.

IV. STATUS OF AMENDMENTS

A Final Office Action was mailed June 2, 2009 and rejected claims 28-47. In response to the Final Office Action, a Notice of Appeal was filed on September 2, 2009.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following summary does not limit the interpretation of the claims pending in the application that is the subject of this Appeal. Rather, the following summary is provided only to facilitate the Board's understanding of the subject matter of this Appeal. Various embodiments of the invention relate to a user interface for an ultrasound probe.

Independent claim 28 recites a method (page 9, paragraph 30 of the specification and Figures 7 and 8) for implementing a speckle reduction filter. The method includes receiving 120 (page 9, paragraph 30 of the specification and Figure 7) a processed data stream from a processor 14 (page 9, paragraph 20 of the specification and Figure 7), and filtering 124 (pages 9 and 10, paragraph 31 of the specification and Figure 7) the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream. The method also includes filtering (pages 12-14, paragraphs 35 and 39 of the specification and Figures 7 and 8) the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set. The method further includes simultaneously co-displaying 138 (pages 11 and 12, paragraphs 34 and 35 of the specification and Figures 7 and 8) on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream.

Independent claim 36 recites an ultrasound imaging system 10 (page 4, paragraph 19 of the specification and Figure 1). The ultrasound system 10 includes a transducer array 20 (pages 5 and 6, paragraphs 22-24 of the specification and Figure 2), a beamformer 12 (pages 4-6,

paragraphs 19, 20, and 22-24 of the specification and Figures 1 and 2), a processor 14 (pages 4 and 5, paragraphs 19-21 of the specification and Figure 1) for processing a receive beam from the beamformer 12, and a scan converter and display controller 16 (page 4, paragraphs 19 and 20 of the specification and Figure 1) operationally coupled to the transducer array 20, the beamformer 12, and the processor 14. The scan converter and display controller 16 is configured to receive 120 (page 9, paragraph 30 of the specification and Figure 7) a processed data stream from the processor 14 (page 9, paragraph 20 of the specification and Figure 7), and filter 124 (pages 9 and 10, paragraph 31 of the specification and Figure 7) the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream. The scan converter and display controller 16 is also configured to filter (pages 12-14, paragraphs 35 and 39 of the specification and Figures 7 and 8) the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set, and simultaneously co-display 138 (pages 11 and 12, paragraphs 34 and 35 of the specification and Figures 7 and 8) on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream.

Independent claim 37 recites a computer readable medium storing a computer program which, when executed by a processor 14 (pages 4 and 5, paragraphs 19-21 of the specification and Figure 1), causes the processor 14 to perform a method (page 9, paragraph 30 of the specification and Figures 7 and 8). The method includes receiving 120 (page 9, paragraph 30 of the specification and Figure 7) a processed data stream from a processor 14 (page 9, paragraph 20 of the specification and Figure 7), and filtering 124 (pages 9 and 10, paragraph 31 of the

specification and Figure 7) the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream. The method also includes filtering (pages 12-14, paragraphs 35 and 39 of the specification and Figures 7 and 8) the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set, and simultaneously co-displaying 138 (pages 11 and 12, paragraphs 34 and 35 of the specification and Figures 7 and 8) on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream.

Independent claim 38 recites a method (page 9, paragraph 30 of the specification and Figures 7 and 8) for implementing a speckle reduction filter. The method includes receiving 120 (page 9, paragraph 30 of the specification and Figure 7) a processed data stream from a processor 14 (page 9, paragraph 20 of the specification and Figure 7), dividing 122 (page 9, paragraph 31 of the specification and Figure 7) the processed data stream into data subsets, and simultaneously filtering 124 (pages 9 and 10, paragraph 31 of the specification and Figure 7) the data subsets by using a speckle reduction filter to produce filtered data subsets. The method also includes producing 128 (page 10, paragraph 32 of the specification and Figure 7) an image data stream based on the filtered data subsets. The filtering step 124 is based on adjustable speckle reduction parameters. The method further includes changing (pages 13 and 14, paragraph 39 of the specification and Figures 7 and 8) values of the speckle reduction parameters between different first and second value sets to form first and second image data streams, and simultaneously co-displaying 138 (pages 11 and 12, paragraphs 34 and 35 of the specification and Figures 7 and 8)

a first image and a second image on a common screen. The first image is generated from the first image data stream, and the second image is generated from the second image data stream. The first image and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively.

Independent claim 46 recites a computer readable medium storing a computer program which, when executed by a processor 14 (pages 4 and 5, paragraphs 19-21 of the specification and Figure 1), causes the processor 14 to perform a method (page 9, paragraph 30 of the specification and Figures 7 and 8). The method includes receiving 120 (page 9, paragraph 30 of the specification and Figure 7) a processed data stream from a processor 14 (page 9, paragraph 20 of the specification and Figure 7), dividing 122 (page 9, paragraph 31 of the specification and Figure 7) the processed data stream into data subsets, and simultaneously filtering 124 (pages 9 and 10, paragraph 31 of the specification and Figure 7) the data subsets by using a speckle reduction filter to produce filtered data subsets. The method also includes producing 128 (page 10, paragraph 32 of the specification and Figure 7) an image data stream based on the filtered data subsets. The filtering step 124 is based on adjustable speckle reduction parameters. The method further includes changing (pages 13 and 14, paragraph 39 of the specification and Figures 7 and 8) values of the speckle reduction parameters between different first and second value sets to form first and second image data streams, and simultaneously co-displaying 138 (pages 11 and 12, paragraphs 34 and 35 of the specification and Figures 7 and 8) a first image and a second image on a common screen. The first image is generated from the first image data stream, and the second image is generated from the second image data stream. The first image

and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively.

Independent claim 47 recites an ultrasound imaging system 10 (page 4, paragraph 19 of the specification and Figure 1). The ultrasound system 10 includes a transducer array 20 (pages 5 and 6, paragraphs 22-24 of the specification and Figure 2), a beamformer 12 (pages 4-6, paragraphs 19, 20, and 22-24 of the specification and Figures 1 and 2), a processor 14 (pages 4 and 5, paragraphs 19-21 of the specification and Figure 1) for processing a receive beam from the beamformer 12, and a scan converter and display controller 16 (page 4, paragraphs 19 and 20 of the specification and Figure 1) operationally coupled to the transducer array 20, the beamformer 12, and the processor 14. The scan converter and display controller 16 is configured to receive 120 (page 9, paragraph 30 of the specification and Figure 7) a processed data stream from the processor 14 (page 9, paragraph 20 of the specification and Figure 7), divide 122 (page 9, paragraph 31 of the specification and Figure 7) the processed data stream into data subsets, and simultaneously filter 124 (pages 9 and 10, paragraph 31 of the specification and Figure 7) the data subsets by using a speckle reduction filter to produce filtered data subsets. The scan converter and display controller 16 is also configured to produce 128 (page 10, paragraph 32 of the specification and Figure 7) an image data stream based on the filtered data subsets. The filtering step 124 is based on adjustable speckle reduction parameters. The scan converter and display controller 16 is further configured to change (pages 13 and 14, paragraph 39 of the specification and Figures 7 and 8) values of the speckle reduction parameters between different first and second value sets to form first and second image data streams, and simultaneously co-display 138 (pages 11 and 12, paragraphs 34 and 35 of the specification and Figures 7 and 8) a

first image and a second image on a common screen. The first image is generated from the first image data stream, and the second image is generated from the second image data stream. The first image and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 28, 30, 32, 34, 35, and 37 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,674,879, hereafter "Weisman".

Claim 29 is rejected under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of U.S. Patent 5,954,653, hereafter "Hatfield".

Claim 31 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of U.S. Patent No. 4,887,306, hereafter "Hwang".

Claim 33 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of U.S. Patent No. 6,879,988, hereafter "Kamath".

Claim 36 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of U.S. Patent No. 5,322,067, hereafter "Prater".

Claims 38, 40, 42, and 44-46 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of Kamath.

Claim 39 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of Kamath and Hatfield.

Claim 41 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of Kamath and Hwang.

Claim 43 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of Kamath and Examiner's Official Notice.

Claim 47 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Weisman in view of Kamath and Prater.

VII. ARGUMENT

Appellants respectfully submit that each claim in the pending application is patentable over the cited references. Appellants traverse the rejections of claims 28-47. Appellants request that the rejections be withdrawn, and request that all presently pending claims be allowed. In support of these requests, a discussion regarding the patentability of the claimed recitations is set forth below.

Under 35 U.S.C. §103, patentability is precluded if the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made. Obviousness is a conclusion of law based upon a number of underlying factual inquiries. Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966). In KSR Int'l Co. v. Teleflex Inc., 550 U.S. 398 (2007), the Supreme Court rejected a rigid approach to the determination of obviousness. Id. at 415. But, merely pointing out that each element in a claim was known in the prior art may be insufficient to render the claim obvious. Id. at 418 ("[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art."). Some articulated reasoning with rational underpinning must be provided to support an obviousness rejection. Id. ("[R]ejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.").

A. Independent Claims 28 and 37 - rejected under § 103 As Unpatentable over Weisman

Appellants submit that the Final Office Action fails to set for a prima facie case of obviousness with respect to claims 28 and 37. Independent claim 28 recites a method for implementing a speckle reduction filter, wherein the method includes "filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream", "filtering the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set", and "simultaneously co-displaying on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream." Independent claim 37 recites a computer readable medium storing a computer program which, when executed by a processor, causes the processor to perform a method that includes "filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream", "filtering the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set", and "simultaneously co-displaying on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream."

The Final Office Action concedes at pages 4 and 5 that Weisman does not expressly teach simultaneously co-displaying first and second images that are speckle-reduced using the

speckle reduction parameters of different first and second value sets. The Final Office Action then concludes that "[s]ince Wiseman discloses both the multiple filtered versions of a raw image that are co-displayed in figure 7 and multiple speckle filtered versions of the raw image produced by the adjustable speckle reduction parameters in col. 13 lines 1-5 the combination of which yields the predictable result of a simultaneous co-display of lightly filtered, moderately filtered, and heavily filtered speckle reduced images." (Final Office Action, page 6).

Weisman describes and illustrates a quad display of a captured echocardiogram raw data image, a speckle reduced image, an edge detected image, and a color quantization of the movement of the image during the heart cycle. The speckle reduced image is generated by applying speckle reduction parameters to the raw data image. The default speckle reduction is performed using moderate speckle reduction parameters, but light or heavy speckle reduction parameters may be chosen instead of moderate. The edge detected image and the color quantization image are generated from edge detection parameters and color quantization parameters, respectively, that are applied to the speckle reduced image.

There is no legitimate reason that one skilled in the art would replace the speckle reduced, edge detected, and color quantization images of Weisman with multiple speckle reduced versions of the same raw image. Applying different speckle reduction parameters to the same raw image is not disclosed in Weisman as asserted in the quotation above from the Final Office Action. Rather, Weisman merely describes that the amount of speckle for a raw image can be selected as light, heavy, or moderate. In support of the Examiner's assertion that Weisman teaches applying different speckle reduction parameters to the same raw image, the Final Office Action reasons that "[c]learly from the same set of images can have different filters

determined by physician changing from one filtering option to another see figure 5 and column 13 lines 1-10 for example the filtering for an image may be altered at the discretion of a physician from having been processed by one filter to have been processed by filtering operation by selecting different processing from the 'menus'."

But, in column 13, lines 1-10 or otherwise, Weisman does not describe that the same raw image is separately applied with two different levels of speckle. Column 13, lines 1-10 of Weisman describes that the physician may "choose one of several processing combinations from menus." Namely, column 13, lines 1-10 of Weisman goes on to say that the physician can select the options of speckle reduction, border detection, and color quantization. When selecting speckle reduction, column 13, lines 1-10 of Weisman describes that the default level of speckle reduction is moderate, but instead of the default moderate speckle, the physician may choose light or heavy speckle. In other words, the raw image may be processed with light, moderate, or heavy speckle. Nowhere does Weisman describe that a physician can or does filter the raw image initially with a light, moderate, or heavy speckle reduction, and thereafter filters the same raw image with a different level of speckle reduction. Accordingly, although Weisman describes initially selecting between different levels of speckle reduction, applying different levels of speckle *to the same raw image* is not a known element within Weisman.

Moreover, the other filtering options described in column 13, lines 1-10, of Weisman provide no basis for co-displaying different speckle filtered versions of the same raw image. The edge detected and color quantization images of Weisman are both generated by further processing the speckle reduced image. The edge detected and color quantization images therefore each include the same speckle reduction parameters that were initially selected for the

speckle reduced image. The edge detected and color quantization images described by Weisman support applying different types of filtering to an already speckle reduced image. Accordingly, the edge detected and color quantization images provide no basis for co-displaying different speckle filtered versions of the same raw image.

Because at least some of what has been asserted by the Examiner as a known element is indeed not a known element of Weisman, simultaneously co-displaying first and second images that are speckle-reduced using different values sets of speckle reduction parameters is not a predictable combination of known elements, as has been asserted. Accordingly, the Final Office Action has not satisfied the requirements of KSR and therefore fails to set forth a prima facie obvious rejection.

For at least the reasons set forth above, the rejection of claims 28 and 37 under 35 U.S.C. §103 (a) as being unpatentable over Weisman is improper and should be withdrawn.

B. Claims 30, 32, 34, and 35 - Rejected under § 103 As Unpatentable over Weisman

Dependent claims 30, 32, 34, and 35 depend from claim 28. Appellants submit that claims 30, 32, 34, and 35 recite further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, at least because claim 28 defines allowable subject matter, dependent claims 30, 32, 24, and 35 also each recite allowable subject matter.

For at least the reasons set forth above, the rejection of claims 30, 32, 34, and 35 under 35 U.S.C. §103(a) as being unpatentable over Weisman is improper and should be withdrawn.

C. Claim 29 - Rejected under § 103 As Unpatentable over Weisman in view of Hatfield

Dependent claim 29 depends from claim 28. Appellants submit that claims 29 recites further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, Hatfield does not make up for the deficiencies of Weisman. Specifically, Hatfield does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Appellants therefore submit that at least because claim 28 defines allowable subject matter, dependent claim 29 also recites allowable subject matter.

For at least the reasons set forth above, the rejection of claim 29 under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of Hatfield is improper and should be withdrawn.

D. Claim 31 - Rejected under § 103 As Unpatentable over Weisman in view of Hwang

Dependent claim 31 depends from claim 28. Appellants submit that claims 31 recites further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, Hwang does not make up for the deficiencies of Weisman. Specifically, Hwang does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Appellants therefore submit that at least because claim 28 defines allowable subject matter, dependent claim 31 also recites allowable subject matter.

For at least the reasons set forth above, the rejection of claim 31 under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of Hwang is improper and should be withdrawn.

E. Claim 33 - Rejected under § 103 As Unpatentable over Weisman in view of Kamath

Dependent claim 33 depends from claim 28. Appellants submit that claims 33 recites further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, Kamath does not make up for the deficiencies of Weisman. Specifically, Kamath does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Appellants therefore submit that at least because claim 28 defines allowable subject matter, dependent claim 33 also recites allowable subject matter.

For at least the reasons set forth above, the rejection of claim 33 under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of Kamath is improper and should be withdrawn.

F. Independent Claim 36 - rejected under § 103 As Unpatentable over Weisman in view of Prater

Independent claim 36 recites an ultrasound system including a scan converter and display controller configured to "filter the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream", "filter the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set",

and "simultaneously co-display on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream."

Claim 36 is submitted to be patentable over the cited references for at least the reasons set forth above with respect to claims 28 and 37. For example, as discussed above, Weisman does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Prater does not make up for the deficiencies of Weisman. Specifically, Prater does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Rather, Prater was cited merely for the assertion that Prater teaches a beamformer.

For at least the reasons set forth above, the rejection of claim 36 under 35 U.S.C. §103 (a) as being unpatentable over Weisman in view of Prater is improper and should be withdrawn.

G. Independent Claims 38 and 46 - rejected under § 103 As Unpatentable over Weisman in view of Kamath

Independent claim 38 recites a method for implementing a speckle reduction filter, wherein the method includes "changing values of the speckle reduction parameters between different first and second value sets to form first and second image data streams", and "simultaneously co-displaying a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream, and further wherein the first image and the second

image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively." Independent claim 46 recites a computer readable medium storing a computer program which, when executed by a processor, causes the processor to perform a method. The method includes "changing values of the speckle reduction parameters between different first and second value sets to form first and second image data streams", and "simultaneously co-displaying a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream, and further wherein the first image and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively."

Claim 38 and 46 are each submitted to be patentable over the cited references for at least the reasons set forth above with respect to claims 28 and 37. For example, as discussed above, Weisman does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Kamath does not make up for the deficiencies of Weisman. Specifically, Kamath does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Rather, Kamath was cited merely for the assertion that Kamath describes dividing a processed data stream into data subsets, simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets, and producing an image data stream based on the filtered data subsets.

For at least the reasons set forth above, the rejection of claims 38 and 46 under 35 U.S.C.

§103 (a) as being unpatentable over Weisman in view of Kamath is improper and should be withdrawn.

H. Claims 40, 42, 44, and 45 - Rejected under § 103 As Unpatentable over Weisman in view of Kamath

Dependent claims 40, 42, 44, and 45 depend from claim 38. Appellants submit that claims 40, 42, 44, and 45 recite further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, at least because claim 38 defines allowable subject matter, dependent claims 40, 42, 44, and 45 also each recite allowable subject matter.

For at least the reasons set forth above, the rejection of claims 40, 42, 44, and 45 under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of Kamath is improper and should be withdrawn.

I. Claim 39 - Rejected under § 103 As Unpatentable over Weisman in view of Kamath and Hatfield

Dependent claim 39 depends from claim 38. Appellants submit that claim 39 recites further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, Hatfield does not make up for the deficiencies of Weisman and Kamath. Specifically, Hatfield does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Appellants therefore submit that at least because claim 38 defines allowable subject matter, dependent claim 39 also recites allowable subject matter.

For at least the reasons set forth above, the rejection of claim 39 under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of Kamath and Hatfield is improper and should be withdrawn.

J. Claim 41 - Rejected under § 103 As Unpatentable over Weisman in view of Kamath and Hwang

Dependent claim 41 depends from claim 38. Appellants submit that claim 41 recites further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, Hwang does not make up for the deficiencies of Weisman and Kamath. Specifically, Hwang does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Appellants therefore submit that at least because claim 38 defines allowable subject matter, dependent claim 41 also recites allowable subject matter.

For at least the reasons set forth above, the rejection of claim 41 under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of Kamath and Hwang is improper and should be withdrawn.

K. Claim 43 - Rejected under § 103 As Unpatentable over Weisman in view of Kamath and Examiner's Official Notice

Dependent claim 43 depends from claim 38. Appellants submit that claim 43 recites further subject matter that is not anticipated or rendered obvious by the cited references. Additionally, the Examiner's Official Notice does not make up for the deficiencies of Weisman

and Kamath. Appellants therefore submit that at least because claim 38 defines allowable subject matter, dependent claim 43 also recites allowable subject matter.

For at least the reasons set forth above, the rejection of claim 43 under 35 U.S.C. §103(a) as being unpatentable over Weisman in view of Kamath and Examiner's Official Notice is improper and should be withdrawn.

L. Independent Claim 47 - rejected under § 103 As Unpatentable over Weisman in view of Kamath and Prater

Independent claim 47 recites an ultrasound imaging system including a scan converter and display controller that is configured to "change values of the speckle reduction parameters between different first and second value sets to form first and second image data streams", and "simultaneously co-display a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream, and further wherein the first image and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively."

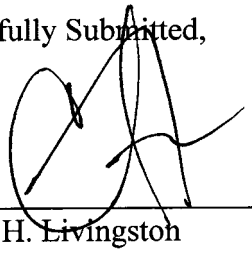
Claim 47 is submitted to be patentable over the cited references for at least the reasons set forth above with respect to claims 28 and 37. For example, as discussed above, Weisman does not describe simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets. Kamath and Prater do not make up for the deficiencies of Weisman. Rather, Kamath was cited merely for the assertion

that Kamath describes dividing a processed data stream into data subsets, simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets, and producing an image data stream based on the filtered data subsets. Prater was cited merely for the assertion that Prater describes a beamformer. Neither Kamath nor Prater describes simultaneously co-displaying first and second images that are speckle-reduced using the speckle reduction parameters of different first and second value sets.

For at least the reasons set forth above, the rejection of claim 47 under 35 U.S.C. §103 (a) as being unpatentable over Weisman in view of Kamath and Prater is improper and should be withdrawn.

In view of the above, Appellants respectfully request that the rejections of all pending claims be withdrawn, and the pending claims allowed.

Respectfully Submitted,



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VIII. CLAIMS APPENDIX

1-27. (canceled)

28. (rejected) A method for implementing a speckle reduction filter comprising:

receiving a processed data stream from a processor;

filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream;

filtering the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set; and

simultaneously co-displaying on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream.

29. (rejected) The method according to claim 28, further comprising increasing a range over which values of data included in at least one of the first and second image data streams are distributed to improve contrast of at least one the first and second speckle-reduced images.

30. (rejected) The method according to claim 28, wherein simultaneously co-displaying comprises simultaneously co-displaying in a dual display mode, said method further comprising enabling a user to enter the dual display mode at least one of during a scan, while a replay of pre-

recorded cine loops is displayed on a screen, and while a still image that is not updated periodically is displayed on the screen.

31. (rejected) The method according to claim 28, further comprising automatically, without user intervention, optimizing at least one of the first and second value sets of speckle reduction parameters based on a scan of an imaging system and what is being imaged.

32. (rejected) The method according to claim 28, wherein simultaneously co-displaying further comprises co-displaying an original unfiltered image on the common screen with the first and second speckle-reduced images, wherein the original unfiltered image is generated from the processed data stream.

33. (rejected) The method according to claim 28, wherein filtering the processed data stream with a first value set of speckle reduction parameters comprises:

dividing the processed data stream into data subsets;

simultaneously filtering the data subsets using a speckle reduction filter to produce filtered data subsets; and

producing the first image data stream based on the filtered data subsets.

34. (rejected) The method according to claim 28, wherein the first speckle-reduced image has less speckle reduction than the second speckle-reduced image.

35. (rejected) The method according to claim 28, wherein filtering the processed data stream with a second value set of speckle reduction parameters comprises changing the values of

the first value set of speckle reduction parameters during at least one of a scan, while a replay of pre-recorded cine loops is displayed on the screen, and while a still image that is not updated periodically is displayed on the screen.

36. (rejected) An ultrasound imaging system comprising:

a transducer array;

a beamformer;

a processor for processing a receive beam from the beamformer;

a scan converter and display controller operationally coupled to the transducer array, the beamformer, and the processor, the scan converter and display controller configured to:

receive a processed data stream from the processor;

filter the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream;

filter the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set; and

simultaneously co-display on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream.

37. (rejected) A computer readable medium storing a computer program which, when executed by a processor, causes the processor to perform a method comprising:

receiving a processed data stream from a processor;

filtering the processed data stream with a first value set of speckle reduction parameters to produce a first image data stream;

filtering the processed data stream with a second value set of speckle reduction parameters to produce a second image data stream, wherein the second value set of speckle reduction parameters is different than the first value set; and

simultaneously co-displaying on a common screen a first speckle-reduced image that is generated from the first image data stream and a second speckle-reduced image that is generated from the second image data stream.

38. (rejected) A method for implementing a speckle reduction filter comprising:

receiving a processed data stream from a processor;

dividing the processed data stream into data subsets;

simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets; and

producing an image data stream based on the filtered data subsets,

wherein the filtering step is based on adjustable speckle reduction parameters, the method further comprising:

changing values of the speckle reduction parameters between different first and second value sets to form first and second image data streams; and

simultaneously co-displaying a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream, and further wherein the first image and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively.

39. (rejected) The method according to claim 38, further comprising increasing a range over which values of data included in at least one of the first and second image data streams are distributed to improve contrast of at least one the first and second images.

40. (rejected) The method according to claim 38, wherein simultaneously co-displaying comprises simultaneously co-displaying in a dual display mode, said method further comprising enabling a user to enter the dual display mode at least one of during a scan, while a replay of pre-recorded cine loops is displayed on a screen, and while a still image that is not updated periodically is displayed on the screen.

41. (rejected) The method according to claim 38, further comprising automatically, without user intervention, optimizing the speckle reduction parameters based on a scan of an imaging system and what is being imaged.

42. (rejected) The method according to claim 38, wherein simultaneously co-displaying further comprises co-displaying an original unfiltered image on the common screen with the first and second images, wherein the original unfiltered image is generated from the processed data stream.

43. (rejected) The method according to claim 38, wherein simultaneously filtering the data subsets comprises simultaneously filtering the data subsets using a Single Instruction-Stream, Multiple Data-Stream (SIMD) processor.

44. (rejected) The method according to claim 38, wherein the first image has less speckle reduction than the second image.

45. (rejected) The method according to claim 38, wherein changing values of the speckle reduction parameters between different first and second value sets comprises changing the values of the speckle reduction parameters during at least one of a scan, while a replay of pre-recorded cine loops is displayed on the screen, and while a still image that is not updated periodically is displayed on the screen.

46. (rejected) A computer readable medium storing a computer program which, when executed by a processor, causes the processor to perform a method comprising:

receiving a processed data stream from a processor;

dividing the processed data stream into data subsets;

simultaneously filtering the data subsets by using a speckle reduction filter to produce filtered data subsets; and

producing an image data stream based on the filtered data subsets,

wherein the filtering step is based on adjustable speckle reduction parameters, the method further comprising:

changing values of the speckle reduction parameters between different first and second value sets to form first and second image data streams; and

simultaneously co-displaying a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream, and further wherein the first image and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively.

47. (rejected) An ultrasound imaging system comprising:

a transducer array;

a beamformer;

a processor for processing a receive beam from the beamformer;

a scan converter and display controller operationally coupled to the transducer array, the beamformer, and the processor, the scan converter and display controller configured to:

receive a processed data stream from the processor;

divide the processed data stream into data subsets;

simultaneously filter the data subsets by using a speckle reduction filter to produce filtered data subsets; and

produce an image data stream based on the filtered data subsets,

wherein the filtering step is based on adjustable speckle reduction parameters, the scan converter and display controller further configured to:

change values of the speckle reduction parameters between different first and second value sets to form first and second image data streams; and

simultaneously co-display a first image and a second image on a common screen, wherein the first image is generated from the first image data stream, and wherein the second image is generated from the second image data stream, and further wherein the first image and the second image are speckle-reduced images using the speckle reduction parameters of the first value set and the speckle reduction parameters of the second value set, respectively.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.